Continental J. Medical Research 7 (1): 10 - 14, 2013 ISSN: 2141 – 4211
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Printed in Nigeria doi:10.5707/cjmedres.2013.7.1.10.14

HISTOLOGICAL EFFECTS OF AQUEOUS EXTRACT OF *Cassia occidentalis* LEAF ON THE OVARIES OF A FEMALE ADULT WISTAR RAT (*Rattus novergicus*).

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ABSTRACT
The histological effect of aqueous extract of *Cassia occidentalis* on the female reproductive organ in wistar rats was studied. A total of twenty female rats were randomly divided into four experimental groups (n=5). They all received feed marsh and water ad libitum. Group 1 were given 100 mg, group 2 were given 200 mg and group 3 received 300 mg of the aqueous extract of *cassia occidentalis* once daily for 28 days, group 4 which is the control group were only fed with feed marsh. The photomicrograph showed moderate vascular congestion, mild tissue separation and mild infiltrates of chronic inflammatory cells at different doses. This study therefore reveals that the extract has antifertility effect on the ovary because of the presence of infiltrates of chronic inflammatory cells in the histology of the ovary.

KEYWORDS: C*assia occidentalis*, ovary, histological effects.

Received for Publication: 15/02/13 Accepted for Publication: 17/04/13
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INTRODUCTION

The exclusive use of herbal remedies to treat and manage ailment had served from outset as the most important therapeutic approach available to man. However, the decline from its use due to the introduction of modern synthetic medicine started at about the beginning of the 20th century up to the 1970s Wills *et al*., (2000).

Traditional medicine account for about 80% of the health needs of the rural populace in most regions of Africa, *Cassia occidentalis* is one of the medicinal plants, the parts of which are of high medicinal value in many countries of Africa Burkhills, (1985). Mythilypriya *et al*., (2007) reported that traditional medicines are used by about 60% of the world population both in the developing and developed countries where modern medicine are predominantly used. The use of herbs requires good knowledge of the dosage, purity, suitable extraction solvent and adverse effects Murray, A. (1998). The prolonged usage of these herbal products without proper monitoring of the usage had brought about a number of health related problem affecting most couples all over the world Leke (2008).

The development of new fertility regulating drugs from medicinal plant is an attractive preposition. A wide variety of synthetic contraceptive agents for example progestogen and ormeloxifene; are available but these are not without side effects Talieh *et al*., (2006).

Cassia occidentalis L. called as kasmard in sankrit, kasondi in hindi, Sanga rai'dore in Hausa, Akidiagbara in Igbo, Abo rere in Yoruba and coffee senna in English belong to family *Leguminosae*, sub-family *caesalpinoidae.* It is botanically classified as both *cassia occidentalis* and *senna occidentalis* Egharevba *et al*., (2010). It is a small, erect, annual herb that can be up to 2 m tall and is found abundantly in rain forest and tropical areas of the world. Its seeds found in long seed pods are sometimes roasted and made into coffee-like beverage. The aqueous extract of *cassia occidentalis* leaves was screened for tannius, anthraquiones, saponins, cardenolides, flavonoids and alkaloids according to the methods described by Trease and Evans (2002).

This study was chosen to investigate the histological effect of aqueous extract of cassia occidentalis leaf on the ovary.

MATERIALS AND METHODS

Plant authentication and extract preparation

Cassia Occidentalis leaves were collected from bush farms in Benin City and authenticated at the herbarium in the Department of Pharmacognosy, Faculty of Pharmacy, University of Benin. The plants were sundried for four days and were taken to an oven to finally dry and totally remove the moisture content. After drying, the leaves were grinded in an electric rotor grinder in the Department of Pharmacognosy into a powdery form. The powdered extract was soaked in distilled water for 48 hours at room temperature. The mixture was filtered into conical flask with watman filter paper. The filtrate was dried at temperature of 30c for 10 hours to produce a gel-like extract. The extract was prepared in the Department of Pharmacognosy, Faculty of Pharmacy, University of Benin, Benin City, Edo State, Nigeria.

Animal diet/housing

Twenty (20) female adult wistar rats were used for this study. The wistar rats were obtained and housed in the animal centre of the college of health sciences, delta state university, Abraka. Each group was kept in a separate cage which was cleaned daily and disinfected at interval. The animals were acclimatized for two weeks, they were kept under controlled condition of light (12 hours light, I dark cycle).

The animals were feed daily with grower mash, manufactured by Topfeeds, Premier Feed Mills Company Limited and water *ad libitum*.

Methodology and generation of samples

Twenty (20) female rats, with an average weight of 150grams were used for this study. They were divided into four groups made up of five (n=5) rats each. There were three test group and one control group. The test groups were administered orally with 100 mg, 200 mg and 300 mg of aqueous extract of *Cassia occidentalis* for group1(low dose), group2(medium dose) and group3(high dose) respectively for twenty-eight days (28). The rats were sacrificed on day thirty (30) after been starved for 24hours by cervical decapitation and ovaries were harvested from each group. Organs harvested were fixed using 10% formol saline.

Statistics

The results were expressed as Mean ± SD, the mean of the experimental and the control groups were compared using Student's T- Test. P values less than 0.05 were considered significant.

RESULT

Table 1: Effects of C*assia occidentalis* aqueous leaf extract on body weight of adult wistar rats

	Day 1	Day 7	Day 14	Day 21	Day 28
Control	149.3±1.53	158±2	157±3	159.7±1.53	163.3±2.31
Group1	150±5	155±5	154±3.61	165±5	170±8.7
Group2	158.3±2.9*	173.3±2.9*	163.3±2.9*	171.7±2.9*	180±5*
Group3	153.3±2.9	158.3±12.6	163.35.8	165±5	171.7±10.4

Values are expressed as mean ± SD, n = 3. *P<0.05: statistically significant when compared with control group.

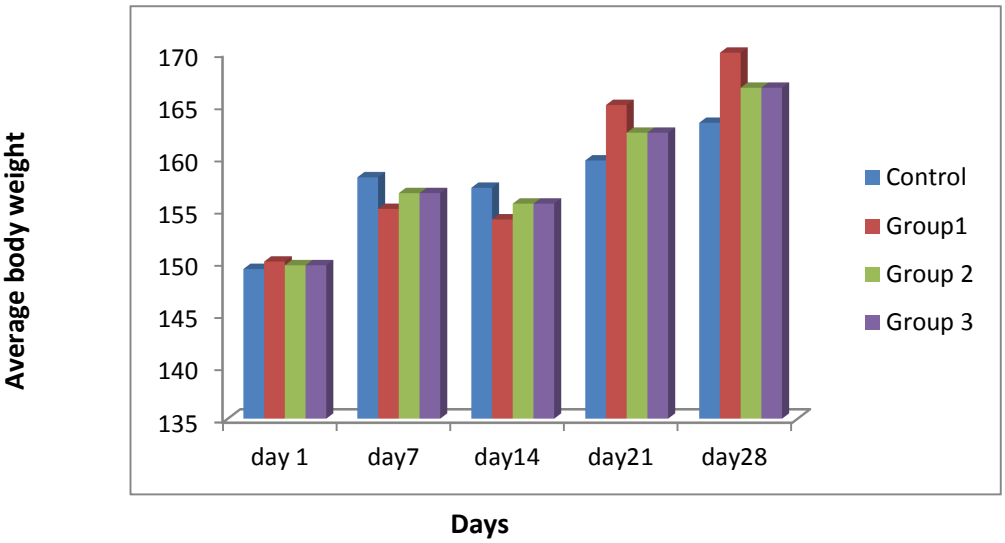

Fig. 1: Changes in wistar rat average body weight during 28 days of administration

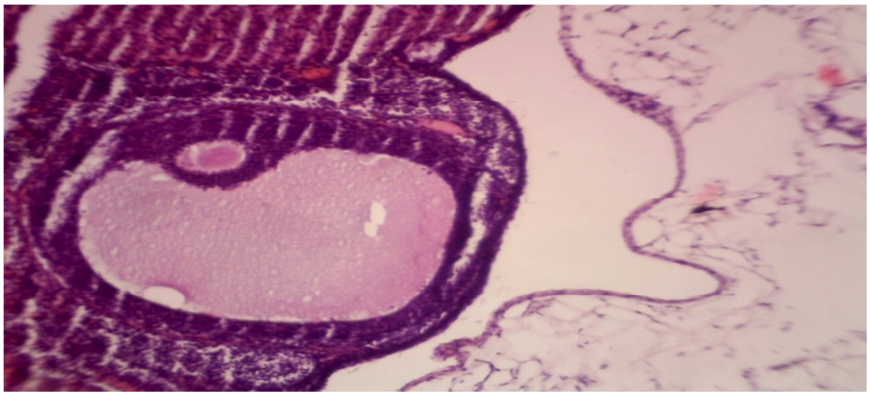

Fig. 2: Control: Normal Rat Ovary showing follicle A, supported by dense stroma B (H&E x 100)

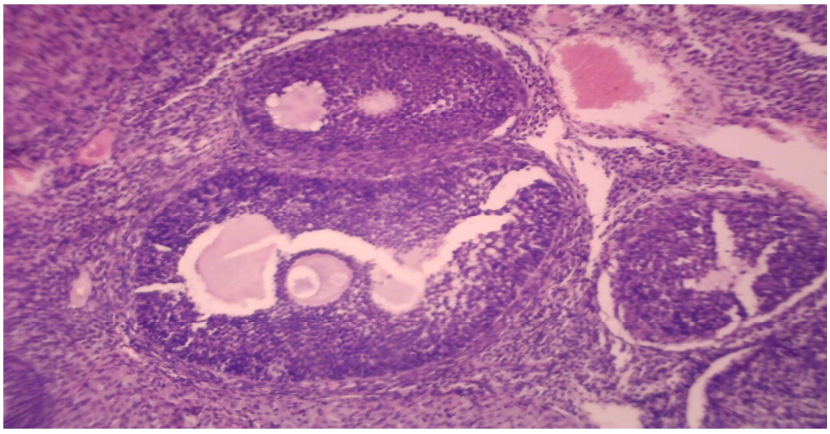

Fig. 3: Rat Ovary treated with 100mg/kg *Cassia occidentalis* for 28 days showing moderate vascular congestion, mild tissue fragmentation and mild infiltrates of chronic inflammatory cells (H&E x 100)

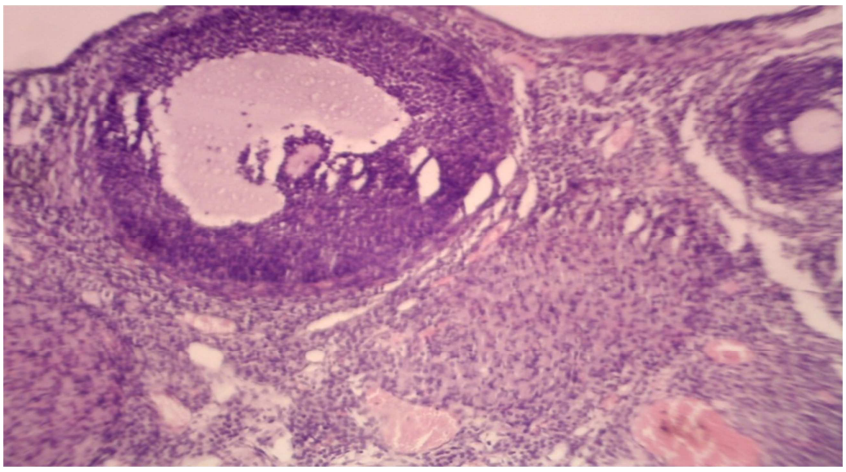

Fig. 4: Rat Ovary treated with 200mg/kg *Cassia occidentalis* for 28 days showing mild vascular congestion, mild tissue fragmentation and mild infiltrates of chronic inflammatory cells (H&E x 40)

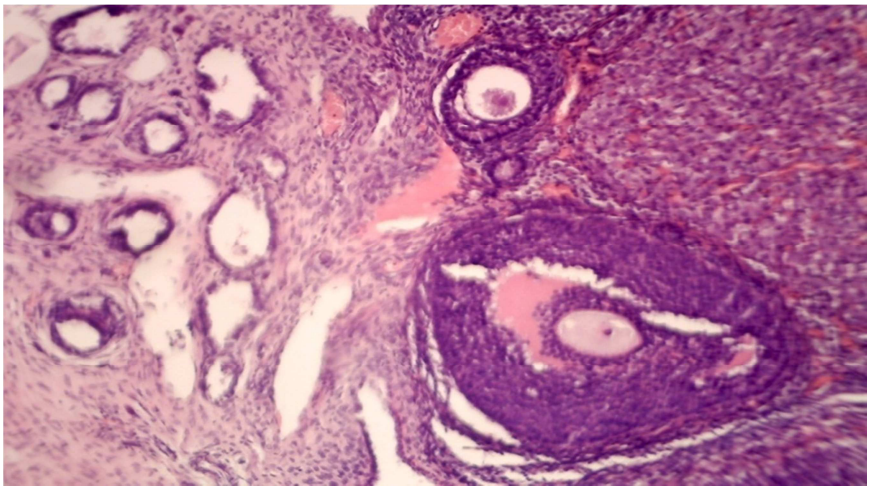

Fig. 5: Rat Ovary treated with 300mg/kg *Cassia occidentalis* for 28 days showing moderate vascular congestion, mild tissue fragmentation and mild infiltrates of chronic inflammatory cells (H&E x 40)

DISCUSSION

Cassia occidentalis is one of the medicinal plants found around the world that is used in treating various ailments. Though various works has been carried out to ascertain its effect on organs like the liver and kidney but not much has been done on the ovary.

In this research work, the histology of the ovary of the control group (only water and feed was administered) was normal and they showed the normal ovarian follicle surround by the dense stroma. The histology of group one (administered 100mg/kg of C*assia occidentalis* daily) showed an abnormal ovarian histo-architecture which are moderate vascular congestion, mild tissue separation and mild infiltrates of chronic inflammatory cells. Ovarian histology in group two (administered 200mg/kg of *Cassia occidentalis*) showed mild vascular congestion, mild tissue separation or fragmentation and mild infiltrates of chronic inflammatory cells .The histology of third (administered 300mg/kg of *Cassia occidentalis*) also showed the same features in group one and two which are mild tissue separation and mild infiltrates of chronic inflammatory cells but had a severed level of vascular congestion. Another study carried out by Ajah and Eteng (2010) on histopathological effects of single acute dose administration of *Artemisia annua* L. on testes and ovaries of wistar rats revealed No adverse histopathological changes were observed in the ovary.

This study is at variance with other study by Aragao *et al.,* (2009) that the effects of sub-acute oral administration of *C. occidentalis* during pregnancy in female wistar rats was performed and the results did not show significant difference between the control and the tested groups in terms of offspring/dam relationship; fetuses, placentae and ovaries weights; number of implantation and resorption sites; number of corpora lutea in the ovaries Aragao (2009).

This study revealed a statistical significant dose independent increase in body weight of animals treated with 200mg of the extract (group 2). Animals treated with 100mg and 300mg of the extract (group1 and 3 respectively) showed a statistical insignificant dose independent increase in body weight when compare with the control group. In a work done by Yadav and Jain (1999) on the antifertilty effect of aqueous extract of seeds of C*assia fistula*in albino female rats revealed that it possess some antifertility properties which is at consonance with the present study, the presence of infiltrates of chronic inflammatory cells shows that the extract may have some properties of antifertility.

CONCLUSION

The present study shows that C*assia occidentalis* has the same effect at various dosages on the histology of the ovary. The effects of C*assia occidentalis* on the histology of the ovary puts doubt on the safety of the herb on pregnant and women planning to have children.

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